**The therapeutic effects of Spirulina algae on COVID-19 hospitalized patients: A randomized clinical trial**

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**Abstract**

**Background:** Spirulina algae have been widely used in food, cosmetic and dietary applications, and its antiviral and immune-enhancing properties have been reported in laboratory and clinical studies.

**Objective:** To evaluate the prescription of spirulina as a safe food supplement that has antiviral properties and N-acetylcysteine in the treatment of hospitalized patients due to COVID-19

**Methods:** This study was conducted as a multi-center, randomized, single-blind, open-label phase II clinical trial on 66 patients with COVID-19. Patients were randomly assigned to two intervention groups and one control group. The intervention groups were defined as follows; the group receiving spirulina algae (23 people) and the group receiving N-acetylcysteine + spirulina algae (21 people). In the control group (22 people), the patients only received the national standard treatment for COVID-19. The intervention groups prescribed 6 grams of spirulina green algae daily (80 mg/kg). The outcomes were the effectiveness of the spirulina ​​on the duration of hospitalization, the rate of admission in the intensive care unit (ICU), and the mortality; patients were followed up during hospitalization and up to three months after that. The study outcomes were compared at the significance level of p<0.05.

**Results:** The duration of hospitalization (P = 0.874), ICU admission (P = 0.320), and mortality (P = 0.320) of patients between the three groups did not show any significant difference. Regarding side effects, the control group showed a minor incidence of headache (P = 0.022) and nausea (P = 0.039). No statistically significant difference was observed regarding the frequency of symptoms after discharge in the three months follow-up (P = 0.420).

**Conclusions:** Our study showed that administering spirulina with or without N-acetylcysteine does not affect the length of hospitalization, hospitalization in the ICU, mortality, and the frequency of symptoms or long COVID.

**Keywords**: spirulina algae,antiviral, N-acetyl cysteine, COVID-19**.**